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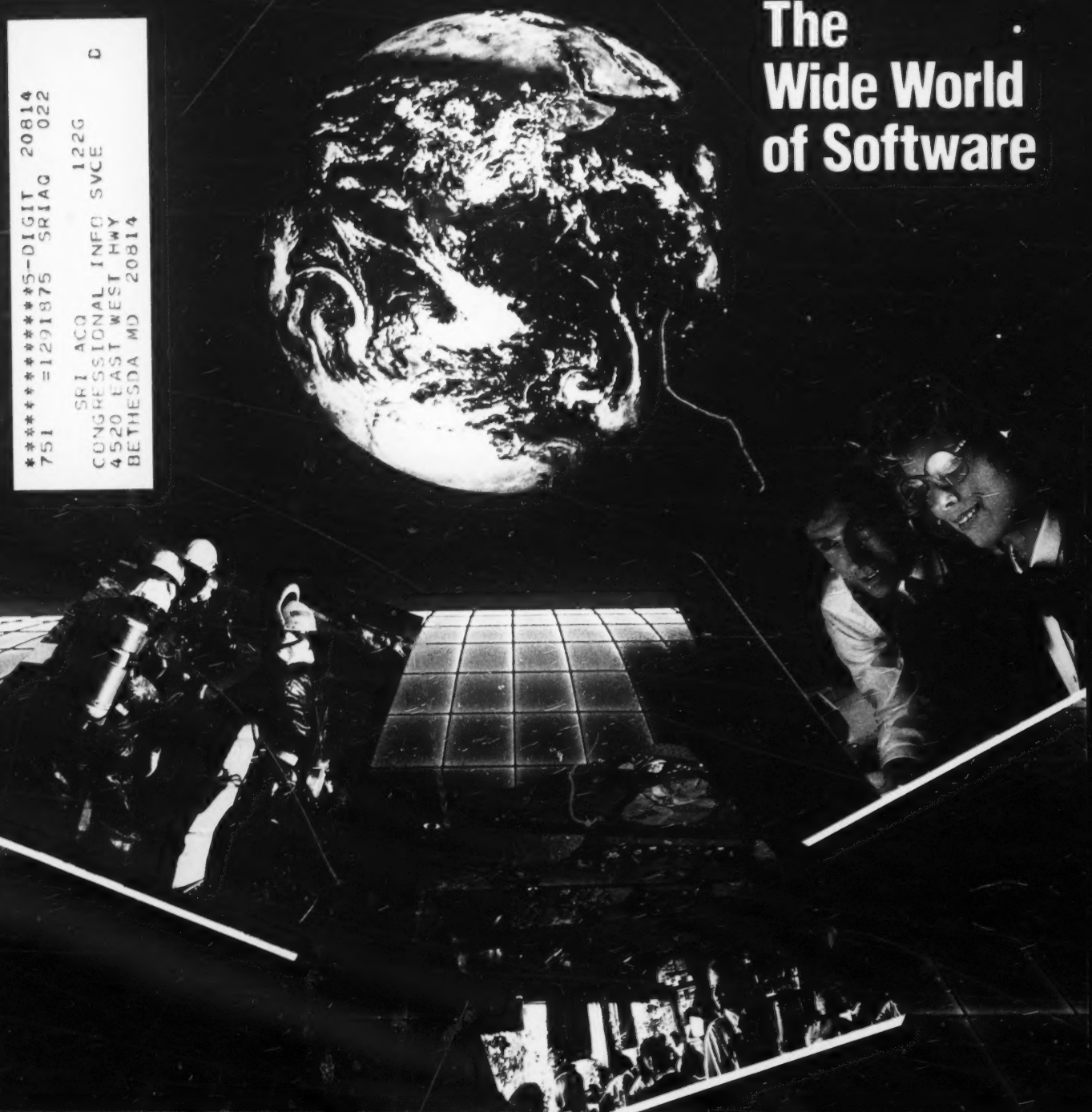

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■ *Arnold E. Keller*
Founding Editor, Group Publisher

■ ***It would be foolhardy to think IS would be immune to cutback fever. In some cases, an IS cutback may be a blessing in disguise.***

Will IS Feel The Axe?

Call it what you will—reorganization, job trimming, fat cutting—the movement to get rid of people seems to be the top item on management's agenda, regardless of the long-term consequences.

As the year-end issue of the *Research Institute Report* states: "Auto industry, over the next five years, plans to chop 120,000 more jobs from a 900,000 workforce. GM is laying off 29,000 workers on top of a scheduled 35,000 white collar cut. AT&T is eliminating 50,000 jobs. Other big industries are following their lead." You can be certain the contagion won't be confined just to big industries.

It would be foolhardy to think that the information systems (IS) operation would be immune to cutback fever, even though information is perhaps the key resource in helping top management cope in a competitive environment. In some cases, an IS cutback may be a blessing in disguise: allowing the write off of some programs that probably never should have been started in the first place, cutting off some backlogs that will have little or no effect on the future of the enterprise.

At any rate, it would be well for IS management to beat the bean counters to the punch by providing its own program for cutbacks and detailing the cost savings and the results such savings would have on the firm's information system. The IS analysis, if factual, might deter any hasty axe wielding by top management.

On a brighter note is a report from Nationwide Recruitment Professionals on the 1987 high-tech job and salary outlook. This survey of leading US recruitment professionals indicates that in the computer and data processing fields, 1987's highest-demand specialists will include systems programmers, systems analysts, network planners and engineers, and microcomputer specialists. Among the industry groups that will set the pace in computer-related hiring are banking/insurance/financial, communications and various service and manufacturing industries.

Following is the report's 1987 salary outlook for selected titles in the computer field.

	Projected US Median Salary	Projected US Average Salary Range
Director/computer/data processing	$66,100	$52,000-$77,300
Systems/programming technical services manager	55,200	45,000- 71,700
Data base administrator	49,250	39,300- 56,000
Sr. systems analyst (7+ yrs. experience)	43,700	37,200- 55,000
Computer project leader	41,916	36,300- 48,650
Sr. programmer/analyst (7+ yrs. experience)	40,150	33,200- 45,700
Software engineer (2-6 yrs. experience)	39,100	30,350- 47,000
Data base analyst (2-6 yrs. experience)	34,750	28,100- 43,200
Staff programmer (2-6 yrs. experience)	32,600	24,900- 40,300
Entry-level BS/computer science	27,100	23,400- 30,800

Source: Dowden & Co. "1987 High-Tech Salary Outlook."

Arnie

The Way to Handle Electronic Messages

An electronic message handling system (EMHS) based on the X.400 standard can optimize revenue generation and return on investment.

By Donald E. Ross, Program Manager
International Telemail Systems
GTE Telenet Communications, Reston, VA

Electronic message handling systems (EMHSs) can make or break your organization. An immediate response to this statement most probably would be, "That's absurd," followed by, "What is an electronic message handling system?" In the truest sense of the words, an EMHS provides for transmission of voice, text or data between two entities using terminal, telephonic or computer facilities.

More and more information systems (IS) managers are being asked to provide high-tech means of capturing and disseminating accurate and timely information. Often, these solutions are more costly than the benefit derived, and require extremely long implementation schedules. Unfortunately, by the time the information system is deployed, in many cases the configuration has become archaic and no longer meets the need.

In an environment of ever-changing technology, today's decision can easily become tomorrow's folly. In the selection of what is truly needed to support management's decision-making process, IS managers can easily be dissuaded by budget constraints and the urgency of the situation from the best solution. It is of paramount importance to always maintain not only the vision of today's needs, but the future's as well.

Issues involved in selection of appropriate communications resources and facilities are extremely varied. In the past, total reliance on land lines was the order of the day. As long as protocols and equipment were identical at each end of the communication link, the iterative process could occur. This method was cumbersome, unreliable and costly. Fortunately, however, advances in the last 10 to 15 years allow different equipment types to be used with high-speed trunk lines, X.25 packet-switching networks (both public and private), microwave and satellite links, shared bandwidth and fiber optics.

But all these capabilities are still not enough. Questions arise relating to what is the best solution: equipment, applications or both? What is the best approach: distributed or centralized systems or a combination? Logic dictates that the type of system (network) selected is relative to the needs and logistics of the business. Therefore, the primary concerns are cost-effectiveness, reliability and service to the user.

A most effective means of addressing these concerns is a telecommunications protocol called the CCITT X.400 standard. This standard provides for an overlay of the X.400 protocol on the existing X.25 packet-switching network. It defines the system model and service elements, as well as seven other layers for information exchange among users, microcomputers and mainframe computers.

Figure 1.

X.400 Series Recommendations

- X.400 — System model and service elements
- X.401 — Basic service elements and optional user interfaces
- X.408 — Encoded information-type conversion rules
- X.409 — Presentation transfer syntax and notation
- X.410 — Remote operations and reliable transfer system
- X.411 — Message transfer layer
- X.420 — Interpersonal messaging user-agent layer
- X.430 — Access protocol for teletex terminals

Working with the model shown in Figure 1, members of the CCITT X.400 study group are combining existing protocols such as telex, teletex, facsimile, binary data structures and electronic mail systems. Formal approval of the X.400 standard was granted at the CCITT plenary session last October.

Approval of X.400 means IS managers can satisfy corporate management's need for information in a more viable and cost-effective manner through the use of X.25 packet-switching networks, micros, inexpensive terminals and X.400-based EMHSs. IS managers can start planning the specific criteria needed to implement an EMHS uniquely tailored to their corporation's requirements.

Even though messaging systems such as telex and TWX may be considered dying, all viable messaging systems now in use both domestically and internationally must be combined. This will be necessary for at least the next eight to 10 years.

Through the advent of public and private X.25 packet-switching networks, telex conversion is currently accomplished with hardware and software utilities. Converted transmissions are then passed through international gateway points to and from the US. This is hardly sufficient for the need. In addition to a conversion from BAUDOT to RS232, speed conversion is also required. Telex transmits at 50 bits per second (bps) and teletex at 110 bps. Without buffering and speed conversion, it is impossible to consider interworking these communications methods.

Significant opportunites for enhanced communication capabilities are possible, however, by in-bound trunking to EMHSs at rates of at least

9,600 bps. Also creating opportunities is the high-speed storage and forwarding of significant numbers of messages by the international record carriers such as Western Union, RCA Global Communications, ITT and others. With additional store-and-forward capabilities contained in an EMHS, data and information can be trunked via networks at rates of 56,000 bps or even at T1 carrier speeds of over one million bps.

Transborder data flow. Regulation of transborder data flow by multinational organizations is being performed by the private sector. Working with government regulatory agencies and special committees established specifically to study the issues, the private sector is also thoroughly involved in the analysis of all issues concerning transborder data flow. Primary emphasis is being placed on privacy, security, unrestricted information flow and economic impacts.

Foreign countries such as France, Germany, the United Kingdom, China and Japan view things from a different perspective. In these countries, restrictive regulations apply which might prevent unconstrained flow of information. In common practice, however, multinational corporations conforming to local regulations rarely experience any difficulties in daily business communications.

Conforming to local regulations can become costly in such countries as Germany if systems are not implemented properly. Regulatory bodies there have decreed that data flowing out of that country must have been processed on an in-country computer. This means the multinational organization involved must either install a computer facility in that country or contract for capacity on an existing in-country resource.

Although it may appear that some foreign countries are setting themselves up to restrict transborder data flow, the reality is that they feel the need to protect their national interests from exploitation. To do so, they are attempting to impose technical, economic and bureaucratic conditions on foreign services and information exports. IS managers tasked with deployment of communications networks crossing international boundaries must make themselves aware of existing regulations and act accordingly within the system.

When dealing with a foreign public telephone and telecommunications organization, costs for equipment, telephone lines and overall administration must be planned for. Modifications to existing in-house systems have to be made to accommodate the additional functionality and subsequent accounting and report functions. These can be significant budget and staffing issues. Accordingly, multiple levels of management awareness and support are mandatory. Information on the average message costs for domestic and international messaging are shown in Figure 2.

Figure 2.

Average Cost of Electronic Mail Messages

Messages per month	Domestic message cost	International message cost
In-house*		
More than 1,000	$0.05-0.07	$0.15-0.21
500 to 1,000	$0.10-0.20	$0.30-0.60
100 to 500	$0.20-0.35	$0.60-1.05
Less than 100	$0.35-1.00	$1.05-3.00
Public service	$0.50-1.00	$1.25-5.00

*These charges are for transmission only; they do not include system start-up. Number is in thousands.

Source: Office Information Systems publication (January 25, 1986), "Electronic Mail: An Analysis of Options for the Office."

IS in the hot seat. What has all this to do with the CCITT X.400 standard and the role of an organization's IS manager? The answer is everything. The basic responsibility for communications was most likely levied on the IS manager for marketing, cost-saving and revenue-generating reasons. From the perspective of cost-effectiveness and return on investment, the IS manager is on the hot seat and must find a communications solution. An X.400 EMHS can be the answer to the problem, depending on volume and timing requirements.

EMHSs can be acquired almost off the shelf from most vendors. A system must be slightly tailored to an organization's specific needs, but this is a short modification and deployment cycle. The maximum time from start of the procurement cycle to operational capability varies from one to six months, depending on what unique features are required. If the organization already uses one of the EMHS-based systems (Prime or Tandem, for example), operational readiness time would be shortened significantly. Additionally, it would negate any requirement for substantial training of management, operation and maintenance staff, and probably reduce hardware upgrade needs.

Some notable organizations that have serious commitment to the X.400 effort are: CompuServe (InfoPlex), General Electric Information Services Co. (Quick-Comm), GTE Telenet (Telemail), McDonnell Douglas (OnTyme), MCI Telecommunications (MCI Mail and Mail-Com), RCA Global Communications (RCA Mail), Western Union (EasyLink) and ITT (Dialcom). ITT and British Telecom are currently conducting negotiations for the latter to acquire the Dialcom product.

If your company is multinational, an X.400 EMHS can be the answer to your transborder data communications needs. But whether your company crosses borders or not, X.400 can provide the requisite cost-effective solution, ease of use with minimum of training and increased revenues through the use of cost-saving networking considerations. The capability is available, the technology is good, and the IS manager need only avail him- or herself of the opportunity to succeed. (IS)

Planning Checklist

Planning is essential to ensure any electronic message handling system (EMHS) meets company needs. A checklist of questions, such as the following, should be circulated throughout the organization to determine requirements.

- What is the potential number of users?
- What method of communication is currently used?
- What is the average message length?
- How time-sensitive are the messages?
- Do all users require terminals or micros?
- What is the projected volume of messages?
- What type of traffic is anticipated: domestic, international?
- Is the existing terminal population adequate for an EMHS?
- What is the makeup of the user population: computer novices or experts? (IS)